

What is claimed is:

1. A semiconductor device comprising:
  - a substrate on which is formed an interconnecting pattern;
  - 5 a first semiconductor chip provided above the substrate and having a first electrode on a surface facing the substrate; and
  - a second semiconductor chip provided above the first semiconductor chip and having a second electrode on a surface facing the substrate,
  - wherein the substrate has a bent portion inclined from the first electrode to the second
  - 10 electrode, and
  - wherein the interconnecting pattern extends along the bent portion and is electrically connected to the first and second electrodes.
2. The semiconductor device as defined by claim 1,
- 15 wherein a slit is formed in the bent portion of the substrate so as to extend in a direction crossing the direction from the first electrode to the second electrode.
3. The semiconductor device as defined by claim 1,- 20 wherein a dielectric film that covers the interconnecting pattern is formed in the bent portion of the substrate.
- 4. The semiconductor device as defined by claim 1,- wherein the first electrode is disposed on an edge portion of the first semiconductor chip.
- 25 5. An optical module comprising:
  - a substrate on which is formed an interconnecting pattern and an aperture portion;
  - an optical chip provided above the substrate and having an optical portion and a first

electrode on a surface facing the substrate, the optical portion being disposed so as to face the aperture portion; and

a circuit chip provided above the optical chip and having a second electrode on a surface facing the substrate;

5 wherein the substrate has a bent portion inclined from the first electrode to the second electrode; and

wherein the interconnecting pattern extends along the bent portion and is electrically connected to the first and second electrodes.

10 6. The optical module as defined by claim 5,

wherein a slit is formed in the bent portion of the substrate so as to extend in a direction crossing the direction from the first electrode to the second electrode.

7. The optical module as defined by claim 5,

15 wherein a dielectric film that covers the interconnecting pattern is formed in the bent portion of the substrate.

8. The optical module as defined by claim 5,

wherein the first electrode is disposed on an edge portion of the optical chip.

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9. The optical module as defined by claim 5, further comprising:

a lens disposed at a distance from the optical portion of the optical chip; and

a casing provided so as to hold the lens and also surround at least the optical portion.

25 10. An optical module comprising:

a first circuit chip having a first electrode on the front surface of the first circuit chip;

a second circuit chip having a second electrode on the front surface of the second circuit

chip, the rear surface of the second circuit chip being affixed to the rear surface of the first circuit chip;

a first optical chip having a third electrode and a first optical portion on the front surface of the first optical chip, the rear surface of the first optical chip being affixed to the front surface  
5 of the first circuit chip;

a second optical chip having a fourth electrode and a second optical portion on the front surface of the second optical chip, the rear surface of the second optical chip being affixed to the front surface of the second circuit chip;

10 a first wiring substrate including a first substrate and a first wiring pattern provided on the first substrate, the first substrate having a first aperture portion disposed in a manner that the first optical portion faces the first aperture portion, the first wiring pattern being electrically connected to the first electrode and the third electrode; and

15 a second wiring substrate including a second substrate and a second wiring pattern provided on the second substrate, the second substrate having a second aperture portion disposed in a manner that the second optical portion faces the second aperture portion, the second wiring pattern being electrically connected to the second electrode and the fourth electrode,

wherein the first substrate has a first bent portion inclined from the third electrode to the first electrode,

wherein the first wiring pattern extends along the first bent portion,

20 wherein the second substrate has a second bent portion inclined from the second electrode to the fourth electrode, and

wherein the second wiring pattern extends along the second bent portion.

11. An optical module comprising:

25 a first circuit chip having a first electrode on the front surface of the first circuit chip;  
a second circuit chip having a second electrode on the front surface of the second circuit chip, the rear surface of the second circuit chip being affixed to the rear surface of the first circuit

chip;

a first optical chip having a third electrode and a first optical portion on the front surface of the first optical chip, the rear surface of the first optical chip being affixed to the front surface of the first circuit chip;

5       a second optical chip having a fourth electrode and a second optical portion on the front surface of the second optical chip, the rear surface of the second optical chip being affixed to the front surface of the second circuit chip; and

10      a wiring substrate including a substrate, a first wiring pattern provided on the substrate, and a second wiring pattern provided on the substrate, the substrate having a first aperture portion disposed in a manner that the first optical portion faces the first aperture portion and a second aperture portion disposed in a manner that the second optical portion faces the second aperture portion, the first wiring pattern being electrically connected to the first electrode and the third electrode, the second wiring pattern being electrically connected to the second electrode and the fourth electrode,

15      wherein the substrate has a first bent portion inclined from the third electrode to the first electrode and a second bent portion inclined from the second electrode to the fourth electrode;

      wherein the first wiring pattern extends along the first bent portion; and

      wherein the second wiring pattern extends along the second bent portion.

20    12. The optical module as defined by claim 10,

      wherein the second optical chip overlaps the first optical chip.

13. The optical module as defined by claim 11,

      wherein the second optical chip overlaps the first optical chip.

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14. The optical module as defined by claim 10, further comprising:

      a first lens disposed at a distance from the optical portion of the first optical chip;

a second lens disposed at a distance from the optical portion of the second optical chip;  
a first casing provided so as to hold the first lens and also surround at least the first  
optical portion; and

5        a second casing provided so as to hold the second lens and also surround at least the  
second optical portion.

15.      The optical module as defined by claim 11, further comprising:

      a first lens disposed at a distance from the optical portion of the first optical chip;  
      a second lens disposed at a distance from the optical portion of the second optical chip;

10        a first casing provided so as to hold the first lens and also surround at least the first  
optical portion; and

      a second casing provided so as to hold the second lens and also surround at least the  
second optical portion.

15      16.     A circuit board on which is mounted the optical module as defined by claim 5.

17.     A circuit board on which is mounted the optical module as defined by claim 10.

18.     A circuit board on which is mounted the optical module as defined by claim 11.

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19.     An electronic instrument comprising the optical module as defined by claim 5.

20.     An electronic instrument comprising the optical module as defined by claim 10.

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21.     An electronic instrument comprising the optical module as defined by claim 11.

22.     A method of fabricating a semiconductor device comprising the steps of:

fixing the rear surface of a first semiconductor chip to the front surface of a second semiconductor chip, the front surface of the first semiconductor chip having a first electrode, the front surface of the second semiconductor chip having a second electrode; and

5       bending a substrate on which is formed an interconnecting pattern between the first electrode and the second electrode, so that the interconnecting pattern is electrically connected to the first electrode and the second electrode.

23.      The method of fabricating a semiconductor device as defined by claim 22,

10       wherein, after the interconnecting pattern has been connected electrically to the first electrode, the interconnecting pattern is electrically connected to the second electrode.

24.      A method of fabricating an optical module, the method comprising the steps of:

fixing the rear surface of an optical chip to the front surface of a circuit chip, the front surface of the optical chip having a first electrode and an optical portion, the front surface of the 15 circuit chip having a second electrode;

disposing a wiring substrate including a substrate having an aperture portion and an interconnecting pattern provided on the substrate, so that the aperture portion faces the optical portion; and

20       bending the substrate between the first electrode and the second electrode, so that the interconnecting pattern electrically connected to the first electrode and the second electrode.

25.      The method of fabricating an optical module as defined by claim 24,

wherein, after the interconnecting pattern has been connected electrically to the first electrode, the interconnecting pattern is electrically connected to the second electrode.